

## IN THE CLAIMS

1. (Currently amended) A medical article, comprising an implantable substrate having a coating deposited on the substrate, the coating comprising a polymer, the polymer being a product of co-polycondensation of a diketene acetal and a diol,

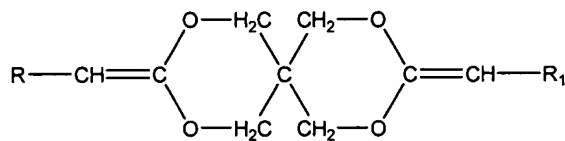
wherein the diol comprises aliphatic, cycloaliphatic, aromatic, or organosilicon diols or combinations thereof,

wherein the aliphatic diol comprises alkylene glycols, poly- or oligoalkylene glycols, or mixtures thereof, and

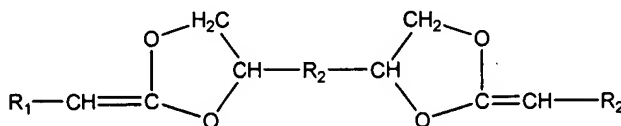
wherein the alkylene glycols are selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, 1,12-dodecanediol, 1,13-tridecanediol, 1,14-tetradecanediol, 1,15-pentadecanediol, 1,16-hexadecanediol, 1,3-propylene glycol, butane-1,3-diol, pentane-2,4-diol, hexane-2,5-diol, and mixtures thereof.

2. (Original) The article of Claim 1, wherein the implantable substrate is a stent.

3. (Currently amended) The article of Claim 1, wherein the diketene acetal is selected from a group of compounds having formulae (I) or (II):



(I)



(II)

wherein R, R<sub>1</sub>, R<sub>3</sub> and are, independently, ~~unsubstituted~~ unsubstituted or substituted straight-chained, branched, or cyclic alkyl radicals C<sub>1</sub>-C<sub>8</sub>, or ~~unsubstituted~~ unsubstituted or substituted

aryl radicals; and R<sub>2</sub> is a straight chain or branched C<sub>1</sub> to C<sub>16</sub> alkyl group or a straight chain or branched C<sub>1</sub> to C<sub>16</sub> alkyl group containing an ether group.

4. (Original) The article of Claim 1, wherein the diketene acetal is selected from a group consisting of 3,9-diethylidene-2,4,8,10-tetraoxaspiro-[5,5]-undecane, 3,9-dipentylidene-2,4,8,10-tetraoxaspiro-[5,5]-heptadecane, 3,9-dibutylidene-2,4,8,10-tetraoxaspiro-[5,5]-pentadecane, 3,9-dipropylidene-2,4,8,10-tetraoxaspiro-[5,5]-tridecane, and mixtures thereof.

5. Cancelled.

6. (Currently amended) The article of Claim ~~5~~1, wherein the aliphatic diols comprise alkylene glycols or oligoalkylene glycols.

7. (Currently amended) The article of Claim 6, wherein the alkylene glycols are selected from a group consisting of ethylene glycol, 1,2-propylene glycol, 1,4-butanediol, 1,5-pentanediol, ~~1,6-hexanediol~~, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, 1,12-dodecanediol, 1,13-tridecanediol, 1,14-tetradecanediol, 1,15-pentadecanediol, 1,16-hexadecanediol, 1,3-propylene glycol, butane-1,3-diol, pentane-2,4-diol, hexane-2,5-diol, and mixtures thereof.

8. (Currently amended) The article of Claim 6, wherein the oligoalkylene glycols are selected from a group consisting of ~~trimethylene glycol, tetramethylene glycol, pentamethylene glycol, hexamethylene glycol~~, poly(tetramethylene glycol), diethylene glycol, triethylene glycol, tetraethylene glycol, poly(tetraethylene glycol), poly(pentaethylene glycol), poly(hexamethylene glycol), poly(propylene glycol), and mixtures thereof.

9. (Currently amended) The article of Claim ~~5~~1, wherein the cycloaliphatic diols are selected from a group consisting of *trans*-cyclohexanedimethanol, *cis*-cyclohexanedimethanol, 1,2-cyclobutanediol, 1,3-cyclobutanediol, 1,2-cyclopentanediol, 1,3-cyclopentanediol, 1,2-

cyclohexanediol, 1,3-cyclohexanediol, 1,4-cyclohexanediol, 1,2-cycloheptanediol, 1,3-cycloheptanediol, 1,4-cycloheptanediol, caprolactone diol, and mixtures thereof.

10. (Currently amended) The article of Claim 5-1, wherein the aromatic diols are selected from a group consisting of *p*- benzenedimethanol, *o*- benzenedimethanol, *m*- benzenedimethanol, and mixtures thereof.

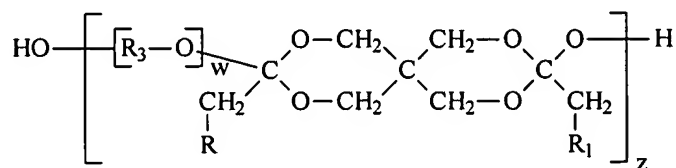
11. (Currently amended) The article of Claim 5-1, The article of Claim 5, wherein the organosilicon diol is a carbinol-terminated poly(dimethyl siloxane).

12. (Original) The article of Claim 1, wherein a hydroxylated functional compound is additionally included in the polycondensation process.

13. (Original) The article of Claim 12, wherein the hydroxylated functional compound comprises poly(alkylene glycols), hydroxylated poly(N-vinyl pyrrolidone), dextran, dextrin, hyaluronic acid, derivatives of hyaluronic acid, poly(2-hydroxyethyl methacrylate), hydroxy functional poly(styrene sulfonate), hydroxy functional phosphoryl choline methacrylate polymers, polymers with both hydroxyl and phosphoryl choline functionality, heparin, or mixtures thereof.

14. (Original) The article of Claim 13, wherein the poly(alkylene glycols) are selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), poly(tetramethylene glycol), and poly(ethylene oxide-co-propylene oxide).

15. (Currently amended) A medical device, comprising a coating, the coating comprising a polymer including a unit having a formula:



wherein:

R and R<sub>1</sub> are, independently, ~~unsubstituted~~ unsubstituted or substituted straight-chained, branched, or cyclic alkyl radicals C<sub>1</sub>-C<sub>8</sub>, or ~~unsubstituted~~ unsubstituted or substituted aryl radicals;

R<sub>3</sub> is an aliphatic, cycloaliphatic, aromatic, or organosilicon group; and

“w” and “z” are integers, where the value of “w” is between 1 and 40, the value of “z” is between 9 and 700,

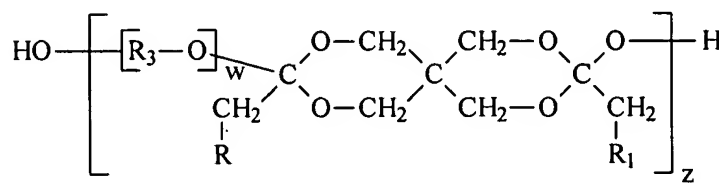
wherein the aliphatic diols comprises alkylene glycols, poly- or oligoalkylene glycols, or mixtures thereof; and

wherein the alkylene glycols are selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, 1,12-dodecanediol, 1,13-tridecanediol, 1,14-tetradecanediol, 1,15-pentadecanediol, 1,16-hexadecanediol, 1,3-propylene glycol, butane-1,3-diol, pentane-2,4-diol, hexane-2,5-diol, and mixtures thereof.

16. (Original) The device of Claim 15, wherein the aliphatic radicals are selected from a group consisting of *n*-butyl and *n*-hexyl.

17. (Original) The device of Claim 15, wherein the cycloaliphatic radicals are selected from a group consisting of *trans*-cyclohexyl and *cis*-cyclohexyl.

18. (Currently amended) ~~The device of Claim 15,~~ A medical device, comprising a coating, the coating comprising a polymer including a unit having a formula:



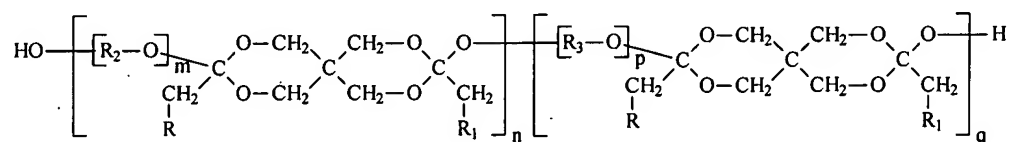
wherein:

R and R<sub>1</sub> are, independently, unsubstituted or substituted straight-chained, branched, or cyclic alkyl radicals C<sub>1</sub>-C<sub>8</sub>, or unsubstituted or substituted aryl radicals;

R<sub>3</sub> is an aliphatic, cycloaliphatic, aromatic, or organosilicon group; and

“w” and “z” are integers, where the value of “w” is between 1 and 40, the value of “z” is between 9 and 700, and

further comprising a polymer having a formula



wherein:

R<sub>2</sub>-O is a non-fouling moiety derived from a hydroxylated functional compound;

R<sub>3</sub> is an aliphatic or cycloaliphatic group;

“m,” “n,” “p,” and “q” are all integers, where the value of “m” is between 5 and 500, the value of “n” is between 2 and 350, the value of “p” is between 1 and 20, and the value of “q” is between 10 and 550.

19. (Original) The device of Claim 18, wherein the hydroxylated functional compound comprises poly(alkylene glycols), hydroxylated poly(N-vinyl pyrrolidone), dextran, dextrin, hyaluronic acid, derivatives of hyaluronic acid, poly(2-hydroxyethyl methacrylate), hydroxy functional poly(styrene sulfonate), hydroxy functional phosphoryl choline methacrylate polymers, polymers with both hydroxyl and phosphoryl choline functionality, heparin, or mixtures thereof.

20. (Original) The device of Claim 19, wherein poly(alkylene glycols) are selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), poly(tetramethylene glycol), and poly(ethylene oxide-co-propylene oxide).

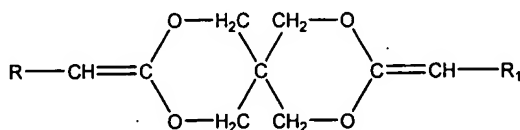
21. (Currently amended) A method for fabricating a coating for an implantable medical device, the method comprising applying a polymer onto the surface of the device, wherein the polymer comprises a product of co-polycondensation of a diketene acetal and a diol, wherein the diol comprises aliphatic, cycloaliphatic, aromatic, or organosilicon diols or combinations thereof,

wherein the aliphatic diols comprises alkylene glycols, poly- or oligoalkylene glycols, or  
mixtures thereof, and

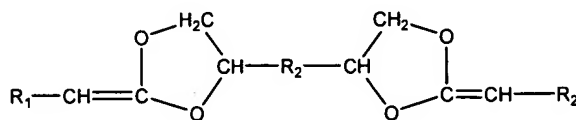
wherein the alkylene glycols are selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, 1,12-dodecanediol, 1,13-tridecanediol, 1,14-tetradecanediol, 1,15-pentadecanediol, 1,16-hexadecanediol, 1,3-propylene glycol, butane-1,3-diol, pentane-2,4-diol, hexane-2,5-diol, and mixtures thereof.

22. (Original) The method of Claim 21, wherein the medical device is a stent.

23. (Currently amended) The method of Claim 21, wherein the diketene acetal is selected from a group of compounds having formulae (I) and (II):



(I)



(11)

wherein R, R<sub>1</sub>, R<sub>3</sub> and are, independently, ~~unsubstituted~~ unsubstituted or substituted straight-chained, branched, or cyclic alkyl radicals C<sub>1</sub>-C<sub>8</sub>, or ~~unsubstituted~~ unsubstituted or substituted aryl radicals; and R<sub>2</sub> is a straight chain or branched C<sub>1</sub> to C<sub>16</sub> alkyl group or a straight chain or branched C<sub>1</sub> to C<sub>16</sub> alkyl group containing an ether group.

24. (Original) The method of Claim 21, wherein the diketene acetal is selected from a group consisting of 3,9-diethylidene-2,4,8,10-tetraoxaspiro-[5,5]-undecane, 3,9-dipentylidene-2,4,8,10-tetraoxaspiro-[5,5]-heptadecane, 3,9-dibutylidene-2,4,8,10-tetraoxaspiro-[5,5]-pentadecane, 3,9-dipropylidene-2,4,8,10-tetraoxaspiro-[5,5]-tridecane, and mixtures thereof.

25. Cancelled.

26. (Currently amended) The method of Claim ~~25~~ 21, wherein the aliphatic diols comprise alkylene glycols or oligoalkylene glycols.

27. (Currently amended) The method of Claim 26, wherein the alkylene glycols are selected from a group consisting of ethylene glycol, 1,2-propylene glycol, 1,4-butanediol, 1,5-pentanediol, ~~1,6-hexanediol~~, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, 1,12-dodecanediol, 1,13-tridecanediol, 1,14-tetradecanediol, 1,15-pentadecanediol, 1,16-hexadecanediol, 1,3-propylene glycol, butane-1,3-diol, pentane-2,4-diol, hexane-2,5-diol, and mixtures thereof.

28. (Currently amended) The method of Claim 26, wherein the oligoalkylene glycols are selected from a group consisting of ~~trimethylene glycol, tetramethylene glycol, pentamethylene glycol, hexamethylene glycol~~, poly(tetramethylene glycol), diethylene glycol, triethylene glycol, tetraethylene glycol, poly(tetraethylene glycol), poly(pentaethylene glycol), poly(hexamethylene glycol), poly(propylene glycol), and mixtures thereof.

29. (Original) The method of Claim 25, wherein the cycloaliphatic diols are selected from a group consisting of *trans*-cyclohexanedimethanol, *cis*-cyclohexanedimethanol, 1,2-cyclobutanediol, 1,3-cyclobutanediol, 1,2-cyclopentanediol, 1,3-cyclopentanediol, 1,2-cyclohexanediol, 1,3-cyclohexanediol, 1,4-cyclohexanediol, 1,2-cycloheptanediol, 1,3-cycloheptanediol, 1,4-cycloheptanediol, caprolactone diol, and mixtures thereof.

30. (Original) The method of Claim 25, wherein the aromatic diols are selected from a group consisting of *p*-benzenedimethanol, *o*-benzenedimethanol, *m*-benzenedimethanol, and mixtures thereof.

31. (Original) The method of Claim 25, wherein the organosilicon diol is a carbinol-terminated poly(dimethyl siloxane).

32. (Original) The method of Claim 21, wherein a hydroxylated functional compound is additionally included in the polycondensation process.

33. (Original) The method of Claim 32, wherein the hydroxylated functional compound comprises poly(alkylene glycols), hydroxylated poly(N-vinyl pyrrolidone), dextran, dextrin, hyaluronic acid, derivatives of hyaluronic acid, poly(2-hydroxyethyl methacrylate), hydroxy functional poly(styrene sulfonate), hydroxy functional phosphoryl choline methacrylate polymers, polymers with both hydroxyl and phosphoryl choline functionality, heparin, or mixtures thereof.

34. (Original) The method of Claim 33, wherein the poly(alkylene glycols) are selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), poly(tetramethylene glycol), and poly(ethylene oxide-co-propylene oxide).

35. (New) The article of claim 1, wherein the diol comprises an aliphatic diol.

36. (New) The article of claim 1, wherein the diol comprises a cycloaliphatic diol.



37. (New) The article of claim 1, wherein the diol comprises an aromatic diol.
38. (New) The article of claim 1, wherein the diol comprises an organosilicon diol.
39. (New) The article of claim 1, wherein the diketene acetal comprises 3,9-diethylidene-2,4,8,10-tetraoxaspiro-[5,5]-undecane.
40. (New) The article of claim 1, wherein the diketene acetal comprises 3,9-dipentylidene-2,4,8,10-tetraoxaspiro-[5,5]-heptadecane.
41. (New) The article of claim 1, wherein the diketene acetal comprises 3,9-dibutylidene-2,4,8,10-tetraoxaspiro-[5,5]-pentadecane.
42. (New) The article of claim 1, wherein the diketene acetal comprises 3,9-dipropylidene-2,4,8,10-tetraoxaspiro-[5,5]-tridecane.
43. (New) The article of claim 12, wherein the hydroxylated functional compound comprises poly(alkylene glycols).
44. (New) The article of claim 12, wherein the hydroxylated functional compound comprises hydroxylated poly(N-vinyl pyrrolidone).
45. (New) The article of claim 12, wherein the hydroxylated functional compound comprises dextran.
46. (New) The article of claim 12, wherein the hydroxylated functional compound comprises dextrin.
47. (New) The article of claim 12, wherein the hydroxylated functional compound comprises hyaluronic acid.
48. (New) The article of claim 12, wherein the hydroxylated functional compound comprises derivatives of hyaluronic acid.

49. (New) The article of claim 12, wherein the hydroxylated functional compound comprises poly(2-hydroxyethyl methacrylate).

50. (New) The article of claim 12, wherein the hydroxylated functional compound comprises hydroxy functional poly(styrene sulfonate).

51. (New) The article of claim 12, wherein the hydroxylated functional compound comprises hydroxy functional phosphoryl choline methacrylate polymers.

52. (New) The article of claim 12, wherein the hydroxylated functional compound comprises polymers with both hydroxyl and phosphoryl choline functionality.

53. (New) The article of claim 12, wherein the hydroxylated functional compound comprises heparin.

54. (New) The article of claim 1, wherein the diol comprises ethylene glycol.

55. (New) The article of claim 1, wherein the diol comprises 1,2-propylene glycol.

56. (New) The article of claim 1, wherein the diol comprises 1,4-butanediol.

57. (New) The article of claim 1, wherein the diol comprises 1,5-pentanediol.

58. (New) The article of claim 1, wherein the diol comprises 1,7-heptanediol.

59. (New) The article of claim 1, wherein the diol comprises 1,8-octanediol.

60. (New) The article of claim 1, wherein the diol comprises 1,9-nonanediol.

61. (New) The article of claim 1, wherein the diol comprises 1,10-decanediol.

62. (New) The article of claim 1, wherein the diol comprises 1,11-undecanediol.

63. (New) The article of claim 1, wherein the diol comprises 1,12-dodecanediol.

64. (New) The article of claim 1, wherein the diol comprises 1,13-tridecanediol.

65. (New) The article of claim 1, wherein the diol comprises 1,14-tetradecanediol.

66. (New) The article of claim 1, wherein the diol comprises 1,15-pentadecanediol.

67. (New) The article of claim 1, wherein the diol comprises 1,16-hexadecanediol.
68. (New) The article of claim 1, wherein the diol comprises 1,3-propylene glycol.
69. (New) The article of claim 1, wherein the diol comprises butane-1,3-diol.
70. (New) The article of claim 1, wherein the diol comprises pentane-2,4-diol.
71. (New) The article of claim 1, wherein the diol comprises hexane-2,5-diol.
72. (New) The article of claim 1, wherein the diol comprises poly(tetramethylene glycol).
73. (New) The article of claim 1, wherein the diol comprises diethylene glycol.
74. (New) The article of claim 1, wherein the diol comprises triethylene glycol.
75. (New) The article of claim 1, wherein the diol comprises tetraethylene glycol.
76. (New) The article of claim 1, wherein the diol comprises poly(tetraethylene glycol).
77. (New) The article of claim 1, wherein the diol comprises poly(pentaethylene glycol).
78. (New) The article of claim 1, wherein the diol comprises poly(hexamethylene glycol).
79. (New) The article of claim 1, wherein the diol comprises poly(propylene glycol).
80. (New) The article of claim 1, wherein the diol comprises *trans*-cyclohexanedimethanol.
81. (New) The article of claim 1, wherein the diol comprises *cis*-cyclohexanedimethanol.
82. (New) The article of claim 1, wherein the diol comprises 1,2-cyclobutanediol,
83. (New) The article of claim 1, wherein the diol comprises 1,3-cyclobutanediol.

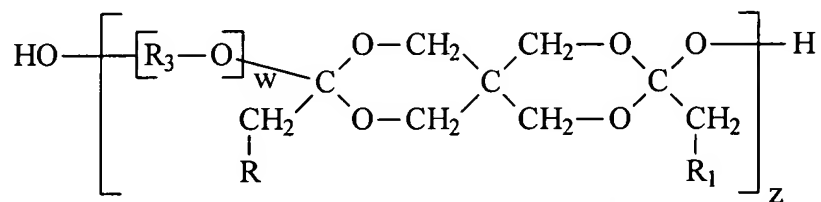
84. (New) The article of claim 1, wherein the diol comprises 1,2-cyclopentanediol.
85. (New) The article of claim 1, wherein the diol comprises 1,3-cyclopentanediol.
86. (New) The article of claim 1, wherein the diol comprises 1,2-cyclohexanediol.
87. (New) The article of claim 1, wherein the diol comprises 1,3-cyclohexanediol.
88. (New) The article of claim 1, wherein the diol comprises 1,4-cyclohexanediol.
89. (New) The article of claim 1, wherein the diol comprises 1,2-cycloheptanediol.
90. (New) The article of claim 1, wherein the diol comprises 1,3-cycloheptanediol.
91. (New) The article of claim 1, wherein the diol comprises 1,4-cycloheptanediol.
92. (New) The article of claim 1, wherein the diol comprises caprolactone diol.
93. (New) The article of claim 1, wherein the diol comprises *p*-benzenedimethanol.
94. (New) The article of claim 1, wherein the diol comprises *o*-benzenedimethanol.
95. (New) The article of claim 1, wherein the diol comprises *m*-benzenedimethanol.
96. (New) The article of claim 1, wherein the diol comprises a carbinol-terminated poly(dimethyl siloxane).
97. (New) A medical article, comprising an implantable substrate having a coating deposited on the substrate, the coating comprising a polymer, the polymer being a product of copolycondensation of a diketene acetal and a diol,  
  
wherein the diol comprises aliphatic, cycloaliphatic, aromatic, or organosilicon diols or combinations thereof, and  
  
wherein the cycloaliphatic diol is selected from a group consisting of *cis*-cyclohexanedimethanol, 1,2-cyclobutanediol, 1,3-cyclobutanediol, 1,2-cyclopentanediol, 1,3-cyclopentanediol, 1,2-cyclohexanediol, 1,3-cyclohexanediol, 1,4-cyclohexanediol, 1,2-

cycloheptanediol, 1,3-cycloheptanediol, 1,4-cycloheptanediol, caprolactone diol, and mixtures thereof.

98. (New) A medical article, comprising an implantable substrate having a coating deposited on the substrate, the coating comprising a polymer, the polymer being a product of copolycondensation of a diketene acetal and a diol,

wherein the diketene acetal is selected from the group consisting of 3,9-dipentylidene-2,4,8,10-tetraoxaspiro-[5,5]-heptadecane, 3,9-dibutylidene-2,4,8,10-tetraoxaspiro-[5,5]-pentadecane, 3,9-dipropylidene-2,4,8,10-tetraoxaspiro-[5,5]-tridecane, and mixtures thereof.

99. (New) A medical device comprising a coating which comprises a polymer including a unit having a formula:



wherein:

R and R<sub>1</sub> are, independently, unsubstituted or substituted straight-chained, branched, or cyclic alkyl radicals C<sub>1</sub>-C<sub>8</sub>, or unsubstituted or substituted aryl radicals;

R<sub>3</sub> is an aliphatic, cycloaliphatic, aromatic, or organosilicon group; and

“w” and “z” are integers, where the value of “w” is between 1 and 40, the value of “z” is between 9 and 700, and

wherein the cycloaliphatic diol is selected from a group consisting of *cis*-cyclohexanedimethanol, 1,2-cyclobutanediol, 1,3-cyclobutanediol, 1,2-cyclopentanediol, 1,3-cyclopentanediol, 1,2-cyclohexanediol, 1,3-cyclohexanediol, 1,4-cyclohexanediol, 1,2-

cycloheptanediol, 1,3-cycloheptanediol, 1,4-cycloheptanediol, caprolactone diol, and mixtures thereof.